

REMARKS

Claims 18-32 re pending. Claim 18 tracks prior Claims 1 and 10, but the end of the claim includes the phrase “at a LHSV of 0.3 to 3.0 hour⁻¹”. Support for this phrase is found in the specification on page 9, lines 4-5. Claims 19-32 track the prior claims and find support in the disclosure as follows: Claim 19 (Claim 2), Claim 20 (Claim 3), Claim 21 (Claim 4), Claim 22 (Claim 5), Claim 23 (Claim 5; page 5, line 20), Claim 24 (Claim 6) and Claim 25 (Claim 7). New Claims 26-32 find support in original Claim 1 and Claim 33 finds support in the specification at page 9, line 5. Accordingly, the Applicants do not believe that any new matter has been introduced.

Rejection – 35 U.S.C. § 102

Claims 10-17 were rejected under 35 U.S.C. § 102(b) as being anticipated by Markert et al., DE 19520103 (Abstract). This rejection is moot in view of the cancellation of these claims and would not apply to the new claims which are directed to a process specifying the LHSV condition of 0.3 to 3.0 hr⁻¹ for the following reasons.

Markert et al. disclose a process for the production of alkyl-substituted butenols. Although the basic reactions of Markert et al. are the same as the reactions of the present invention, the temperature condition in the reduction step (ii) is remarkably different between Markert et al. and the present invention. That is, the reduction temperature disclosed by Markert et al. is only 160°C in Example (Beispiel) 3 (see page 5, line 14 of Markert et al. and also page 3, lines 1-7 of the specification), while the reduction temperature is “40 to 60°C” in the present invention, see independent Claim 18.

In the reduction step (ii) of the process according to the present invention, only the aldehyde group of the unsaturated aldehyde is reduced while maintaining the double bond intact. If the double bond is also reduced in the reduction step (ii), a saturated product is

formed as a by-product. The present invention selects the specific reduction conditions to avoid the reduction of the double bond of the unsaturated aldehyde. One such specific reduction conditions is the specific LHSV now indicated by Claim 18.

In Example 3 (reduction) of Markert et al, 40.0 kg of the crude product of aldol condensation was used per 2.8 kg of the Cu-Zn catalyst, while in Example 3 of the present application, 24.8 kg of the crude product of aldol condensation was used per 26 kg of the Cu/Zn catalyst. The present invention uses a much larger amount of the catalyst in relation to the amount of the crude product than Markert et al.

When the LHSV is set to "0.3 to 3.0 hr⁻¹", the reduction of the unsaturated aldehyde can be carried out at a relatively low temperature of 40 to 60°C and thus the aldehyde group is selectively reduced while the reduction of the double bond is prevented.

Accordingly, the Applicants respectfully request that this ground of rejection be withdrawn, because Markert et al do not disclose or suggest that the reduction step (ii) be carried out at an LHSV of 0.3 to 3.0 hr⁻¹ and within the low temperature range of 40 to 60°C.

CONCLUSION

In view of the above amendments and remarks, the Applicants respectfully submit that this application is now in condition for allowance. Early notification to that effect is respectfully requested.


Respectfully submitted,

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